

REMARKS

The Outstanding Office Action states that Claims 1-22 are pending in the application and stand rejected. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the remarks contained herein.

REJECTION UNDER 35 U.S.C. § 103

The Outstanding Office Action states that Claims 1-22 are rejected under 35 U.S.C. §103 as being unpatentable over Roberts et al. U.S. 6,163,008 in view of Cook et al. U.S. 6,403,915 and Bass et al. U.S. 4,423,304. The Outstanding Office Action further states that Roberts et al. teaches the claimed plasma arc torch except for (1) cooling channels between the cathodic parts of current passage, which is taught by Bass et al. teaching cooling flutes and ribs between electrode holder and electrode, and (2) use of a textured electrode front portion, which is taught by Cook et al. teaching a textured electrode front portion for effecting electrode cooling. Applicants respectfully request reconsideration of these rejections in light of the following remarks.

At the outset, Applicants would like to point out that there are 20 pending claims, not 22 claims as stated in the Outstanding Office Action, wherein Claims 1-8 are directed to a plasma arc torch having a secondary cap and a secondary spacer, Claims 9-13 and 16-19 are directed to a secondary cap, Claims 14 and 15 are directed to a secondary spacer, and Claims 20 is directed to a splatter shield adapted for installation around a secondary cap.

Applicants submit that Roberts et al., Bass et al., and Cook et al. cannot render these claims obvious because none of these references disclose a secondary cap disposed against an interior surface of a shield cap, a secondary spacer disposed

between a tip and a secondary cap, and a splatter shield installed around a secondary cap for blocking molten splatter from contacting a shield cap, let alone their structural features.

More specifically, Roberts et al. does not have a secondary cap and/or a secondary spacer formed between the tip and the shield cap, which use(s) a plurality of crenulations and/or flutes to form a gas passageway for the flow of secondary gas to stabilize the plasma stream exiting the orifice of the tip. In Roberts et al, the only element between the tip and the shield cap, the shield cup insert 141, does not have crenulations and/or flutes that form a gas passageway for the flow of secondary gas.

Bass et al. does not provide any motivation to modify Roberts et al. to achieve a plasma arc torch having a secondary cap and/or a secondary spacer with crenulations and/or flutes. In Bass, the engagement between electrode holder 98 and electrode 288 does not suggest the provision of a secondary cap and a secondary spacer between the tip and the shield cap, let alone using the same to form a gas passageway. Contrary to the Examiner's understanding, the "cooling flutes and ribs 282, 284" referred to in the Outstanding Office Action are actually the bore 282 of the electrode holder 98 and groove 284 formed in the electrode 288 for improved engagement purposes, not for cooling purposes. The groove 284 is formed to "weaken the surface of the bore 282 so that such surface will distort more easily in response to forces exerted thereon when the second electrode is mounted in the bore 282. The groove 286 permits portions of the metal forming the electrode holder 98 to enter the taper formed on the second electrode 242." (Col. 12, Lines 45-50). Since the groove is used to help interlock the electrode

holder and the electrode, and does not allow for passage of any fluid, Bass et al. cannot provide any motivation.

Cook et al. does not provide any motivation either. The use of a textured electrode front portion in Cook does not suggest the provision of a secondary cap and a spacer between the tip and the shield cap to form a gas passageway when, in Cook et al., there is no component disposed between the tip and the shield cap.

Based on at least these reasons, Applicants submit that the cited references cannot render Claims 1-15 obvious when these claims require at least one of the secondary cap and the secondary spacer to have a plurality of crenulations and/or a plurality of flutes for the passage of secondary gas, and respectfully request that these claim rejections be withdrawn.

With respect to Claims 16-19, which require a secondary cap to have a distal protrusion to block molten splatter, the cited references cannot render these claims obvious because the cited references all teach a tip which protrudes from a distal end of the shield cap and which is not protected by any means from molten splatter. Accordingly, Applicants respectfully request that these claim rejections also be withdrawn.

With respect to Claim 20, which requires a splatter shield to be formed of a flexible material and adapted for installation around a secondary cap, the cited references cannot render Claim 20 obvious because the cited references do not have any means to protect the tip from molten splatter whatsoever. Accordingly, Applicants respectfully request that this claim rejection be withdrawn.

CONCLUSION

It is believed that all of the stated grounds of objection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider and withdraw all presently outstanding objections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (314) 726-7524.

Respectfully submitted,

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